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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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22850	7590	10/11/2007		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
PIZALI, ANDREW T				
ART UNIT		PAPER NUMBER		
1794				
NOTIFICATION DATE		DELIVERY MODE		
10/11/2007		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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## Office Action Summary

**Application No.**

09/923,353

**Applicant(s)**

BOIRE ET AL.

**Examiner**

Andrew T. Piziali

**Art Unit**

1794

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 25-30, 34-39, 44 and 45 is/are pending in the application.
- 4a) Of the above claim(s) 26-30, 34-39, 44 and 45 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notices of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group I, claim 25, in the reply filed on 9/24/2007, is acknowledged. The applicant fails to assert that the ten currently claimed inventions are not distinct. Rather, the traversal is on the grounds that there is no serious burden on the examiner to search and examine all ten distinct inventions because all ten distinct inventions were previously searched. The examiner respectfully disagrees.
2. In view of the arguments presented in the appeal brief filed 4/16/2007, each of the ten distinct inventions contain claim limitations that can no longer be considered clearly inherent and/or conventional without additional art and/or examiner arguments. Based on this development alone, there would be a serious search and examination burden on the examiner to search and examine all ten distinct inventions.
3. In addition, the applicant has failed to show, or attempt to show, that the previous search for ten distinct inventions was performed without an undue burden on the examiner. MPEP 803 states that if the search and examination of all the claims in an application cannot be made without serious burden, the examiner may require restriction. All ten inventions currently claimed are independent or distinct for the reasons previously given and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

- (a) the inventions have acquired a separate status in the art in view of their different classification;
  - (b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;
  - (c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);
  - (d) the prior art applicable to one invention would not likely be applicable to another invention;
  - (e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.
4. 37 CFR 1.142(a) provides that restriction is proper at any stage of prosecution. 37 CFR 1.142(a) also indicates that an examiner should make a requirement as early as possible in the prosecution, in the first action if possible, otherwise, as soon as the need for a proper requirement develops.
5. The requirement is still deemed proper and is therefore made FINAL. Claims 26-30, 34-39, 44 and 45 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention.

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 25 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention.

The specification fails to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make a titanium oxide coating wherein the crystallized titanium oxide is in the form of crystallites with an average size of between 60 and 100 nm. The specification appears to enable one skilled in the art to make crystallized titanium oxide in the form of crystallites with a size of between 20 to 30 nm (page 21, lines 6-10 and page 24, lines 15-18), but the specification does not enable one skilled in the art to make the crystallites with an average size of between 60 and 100 nm.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims recite the limitation “the anatase form.” There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102/103***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claim 25 is rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over USPN 5,721,054 to Vandiest.

Vandiest discloses an article comprising a film comprising titania (titanium oxide), which may be in the anatase crystal structure, on a glass substrate (column 2, lines 18-44 and column 3, lines 19-34). Vandiest discloses that the film thickness ranges from 35 to 90 nm (column 3, lines 17-18).

Vandiest does not appear to mention the specific crystallite average size, but Vandiest does disclose that the layers of the coated substrate may be deposited by thermal decomposition, such as by chemical vapor deposition (CVD), of titanium precursors, such as a metallic halide precursors (column 5, lines 31-44 and column 7, lines 12-15). Considering that the current specification discloses that a substantially identical CVD method may preferably be used to deposit the layers of the coated substrate (page 13, lines 9-34 and page 24, lines 15-18), it

appears that the currently claimed properties of the coated substrate are inherently possessed by the coated substrate taught by Vandiest. It appears that the titania film of Vandiest possesses a crystallite average size between 60 and 100nm.

The Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

### ***Claim Rejections - 35 USC § 103***

13. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,984,591 to Plumat in view of any one of USPN 5,721,054 to Vandiest or USPN 6,284,314 to Kato.

Plumat discloses an article comprising a titania film on a glass substrate (see entire document including column 1, lines 35-41, column 2, lines 23-32 and lines 61-67, column 3, lines 39-42 and lines 53-65, column 4, lines 33-62, column 6, lines 15-45, and column 7, lines 9-14). Plumat discloses that the film thickness ranges from some hundred to some thousand angstroms (some ten to hundred nanometers) (column 4, lines 51-62).

Plumat is silent with regards to specific titania, therefore, it would have been necessary and thus obvious to look to the prior art for conventional titania. Vandiest and Kato each provide

this conventional teaching showing that it is known in the art to use anatase titania (see entire documents including column 3, lines 30-34 of Vandiest and column 3, lines 51-65 of Kato). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the titania from anatase titania motivated by the expectation of successfully practicing the invention of Plumat.

Plumat does not mention crystallite average size, but Plumat does disclose that the layers of the coated substrate may be deposited by spray coating (column 2, line 61 through column 3, line 5). Considering that the current specification discloses that a substantially identical spray coating method may preferably be used to deposit the layers of the coated substrate (paragraph bridging pages 13 and 14), it appears that the currently claimed properties of the coated substrate are inherently possessed by the coated substrate taught by the applied prior art. It appears that the titania film inherently possesses a crystallite average size between 60 and 100nm.

#### ***Response to Arguments***

14. Applicant's arguments filed 8/13/2007 have been fully considered but they are not persuasive.

The applicant asserts that the declaration submitted on 5/22/2006 demonstrates that Vandiest does not provide a mechanically resistant and sufficiently adherent coating in order to be used as a glazing. The examiner contends that the argument is without merit because the current claims do not mention the coated substrate being used as a glazing. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).



The applicant asserts that the declaration submitted on 11/23/2005 demonstrates that the method disclosed by Vandiest does not produce the claimed photocatalytic coating. The examiner respectfully disagrees. The applicant asserts that the method disclosed by Vandiest creates a titanium oxide coating that is not a “real coating” because the coating consists of a “dust” of particles.

Firstly, the examiner contends that the current claims do not exclude the photocatalytic coating from comprising a titanium oxide particle layer. The applicant appears to be arguing that a layer of particles is not considered a coating. The examiner respectfully disagrees. The dictionary definition of the word “coating” is “A layer of substance spread over a surface for protection or decoration (emphasis added).” The dictionary definition of the word “layer” is “A single thickness of a material covering a surface or forming an overlying part or segment: a layer of dust on the windowsill (emphasis added).” Considering that Vandiest discloses that the layer is uniform (column 5, lines 31-36) and may have a thickness ranging from 35 to 90 nm (column 3, lines 17-18), the 35 to 90 nm uniform thickness layer of particles is considered a coating. It is also noted that Vandiest repeatedly refers to the titanium oxide layer as a coating layer.

Secondly, the examiner contends that the current claims do not exclude the photocatalytic coating from comprising titanium oxide and tin oxide. Rather, claim 34 actually claims that the photocatalytic layer is to comprise titanium oxide and at least one oxide with a lower refractive index than titanium oxide. Tin oxide has a lower refractive index than titanium oxide and Vandiest specifically discloses that that the coating may comprise titanium oxide and tin oxide (column 4, lines 14-19). The declaration filed on 11/23/2005 specifically states “I believe that, while the conditions given by Vandiest can work well with a mixture of tin tetrachloride and

water, this is not the case for titanium tetrachloride and water.” Therefore, it appears that the conditions given by Vandiest would work well with a mixture of tin oxide and titanium oxide because the titanium oxide particles mentioned in the declaration would be deposited along with the well formed tin oxide coating.

The applicant asserts that accumulated organic matter could not be decomposed by the titanium oxide coating layer of Vandiest because in Examples 2 and 3 the titanium oxide (non-absorbent) coating layer is buried under the Fe-Co-Cr (absorbent) coating layer. The examiner respectfully disagrees. The applicant has carefully cited only the teachings of Examples 2 and 3 of Vandiest. Although Examples 2 and 3 refer to coated substrates wherein the titanium oxide (non-absorbent) coating layer is buried under the Fe-Co-Cr (absorbent) coating layer, Vandiest clearly discloses that in a preferred embodiment the absorbent coating layer is coated directly on the substrate and the non-absorbent coating layer is an exposed coating layer (column 4, lines 19-30).

The applicant asserts that Kato fails to teach or suggest titanium crystallites having an average size between 60 and 100nm (claims 26-28) or that the coating has a contact angle with water below 5 after exposure to luminous rays (claim 27). The examiner respectfully disagrees. Kato discloses an article comprising a thin film comprising titania, with anatase crystal structure, on a glass substrate (column 3, lines 52-65 and column 4, lines 37-48). Kato discloses that the layers of the coated substrate may be deposited by a variety of methods including by dip coating (column 3, lines 26-50). Considering that the specification discloses that a dip coating method may be used to deposit the layers of the coated substrate (page 19, lines 26-39), it appears that the currently claimed properties are possessed by the coated substrate taught by Kato.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T. Piziali whose telephone number is (571) 272-1541. The examiner can normally be reached on Monday-Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew T Piziali/  
Primary Examiner, Art Unit 1771